

### **REMARKS**

Claims 1-15, 20-51 and 60-67 are now pending in the application. The amendments to the claims contained herein are of equivalent scope as originally filed and, thus, are not a narrowing amendment. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

### **REJECTION UNDER 35 U.S.C. § 112**

Claims 2-7 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

Claim 2 has been amended to further clarify that the projection distance calculation step calculates the distance between the sub-signal after the mapping.. and the sub-signal which has been obtained by the sub-signal re-creation step.

Regarding claim 3, the Examiner has objected that the term "top of the original signal" is not clear. As explained in the specification, the input signal is a sequence (such as a sequence of histogram); see p. 51, line 23. Thus in this context, the term "top" would be understood as being the beginning of the sequence. Accordingly, claims 3 and 4 have been amended to replace the term "top" with the term "beginning."

#### **REJECTION UNDER 35 U.S.C. § 101**

Claims 16-19, 52-56 and 57-59 stand rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. These claims have been cancelled.

#### **REJECTION UNDER 35 U.S.C. § 102**

Claims 1-67 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kashino et al. ("A Quick search Algorithm for Acoustic Signals Using Histogram Features – Time Series Active Search," Institute of Electronics Information and Communication Engineers of Japan, Vol. J82-D, No. 9, pp. 1365-1373, September 1999, with citations from the English translation)). This rejection is respectfully traversed in view of the following amendments:

Claim 1 has been amended based on, for example, FIG. 6 and page 52, last paragraph to page 53, first paragraph of the specification (initial sub-signal creation step) and FIG. 7 and page 53, line 2 to page 56, line 7 of the specification (created sub-signal selection step; i.e., the dimensionality of a compressed signal is calculated and segmentation boundaries (i.e., selecting sub-signals) are determined so as to make the dimensionality as small as possible). Claims 12, 16, and 20 have also been amended in the same manner as Claim 1.

Claim 2 has been amended based on, for example, FIG. 15 and page 62, line 11 to last line of the specification.

Claim 5 has been amended based on, for example, FIG. 7 and page 53, line 2 to page 56, line 7 of the specification (with respect to created sub-signal selection step) and FIG. 10 and page 58, line 1 to page 59, line 9 of the specification (with respect to sub-signal re-creation step).

Claim 6 has been amended so as to conform to the amendment of Claim 5.

Claim 41 has been amended so that a segment extraction step includes sub-steps similar to an initial sub-signal creation step; a created sub-signal selection step; and a sub-signal re-creation step recited in Claim 1. Support for this amendment can be found, for example, on page 87, lines 5-10 of the specification. Claims 49, 57, and 65 have also been amended in the same manner as Claim 41.

#### Independent Claims 1, 12, 16, and 20

Claim 1 is directed to compression of a time-series signal based on dynamic segmentation, which is different from TAS disclosed in Kashino. Kashino neither discloses nor suggests the steps recited in Claim 1. The differences between Claim 1 and Kashino are further clarified by the foregoing amendments.

For example, with respect to an initial sub-signal creation step of Claim 1, the Examiner points out section 2.1 and 2.2-Feature extraction of Kashino. The Examiner may consider that the limitation "creating, from the original signal, sub-signals of shorter length than the original signal" recited in the previous (i.e., original) Claim 1 can be read from the disclosure of Kashino which extracts a feature from an input signal and creates a feature vector.

However, the initial sub-signal creation step of amended Claim 1 "creat[es] sub-signals by dividing the original signal into the sub-signals in a time domain so as not to

overlap with each other". Such a distinctive step is neither disclosed nor suggested in any recitations of Kashino, including the sections pointed out by the Examiner.

Moreover, with respect to a created sub-signal selection step of Claim 1, the Examiner points out section 2.1. 2.2-Feature Extraction, and 2.3-Feature modeling by means of histograms.

However, the created sub-signal selection step of amended Claim 1 "prun[es] the created sub-signal candidates having different lengths to those which reduce an amount of data of the compressed signal". Such a distinctive step is neither disclosed nor suggested in any recitations of Kashino, including the sections pointed out by the Examiner.

Since Claims 12, 16, and 20 include limitations similar to those of Claim 1, the foregoing arguments based on Claim 1 can apply to these claims.

Independent Claims 24, 44, 52, and 60

The Examiner asserts that "Regarding claims 24-67, the signal retrieval method, device, program, and computer medium claims are similar in scope and content to the signal retrieval method of claims 9-11 and compression methods of claims 1-8, and are therefore rejected under similar rationale".

However, as explained above, Claim 24 includes the limitation of a reduction in the number of features by means of the pruning of feature sequences in addition to TAS of Kashino. Specifically, Claim 24 includes: "a database feature partitioning step in which a feature sequence which has been produced by repeatedly performing the database feature extraction step while shifting the window upon which attention is focused is partitioned"; and "a database feature pruning step in which a representative

feature is extracted from the feature sequence which has been obtained after partitioning by the database feature partitioning step, and a representative feature sequence is produced which consists of a smaller number of features". Such distinctive steps are neither disclosed nor suggested in Kashino.

Since Claims 44, 52, and 60 include limitations similar to those of Claim 24, the foregoing arguments based on Claim 24 can apply to these claims.

#### Independent Claims 41, 49, 57, and 65

Amended Claim 41 includes an initial sub-sequence creation step, a created sub-sequence selection step, and a sub-sequence re-creation step which substantially recite the same limitations as those of an initial sub-signal creation step, a created sub-signal selection step, and a sub-signal re-creation step recited in Claim 1. Therefore, the foregoing arguments based on Claim 1 can apply to Claim 41. Moreover, since Claims 49, 57, and 65 include limitations similar to those of Claim 41, these arguments can also apply to Claims 49, 57, and 65.

#### Dependent claims 2 and 5

##### Claim 2

The Examiner may consider that Claim 2 can be read from the disclosure of Kashino which compares histograms (compressed signals), calculates a skip width, and shifts a time window by an amount corresponding to the skip width, and recreate histograms.

However, amended Claim 2 includes "a compressed feature creation step of creating the compressed signal from the respective sub-signals after mapping... and the

projection distance". Such a distinctive limitation is neither disclosed nor suggested in any recitations of Kashino, including sections 2-4 of Kashino pointed out by the Examiner.

#### Claim 5

The Examiner may consider that the limitation "a segmentation boundary shiftable width which is determined in advance" recited in previous Claim 5 can be read from the width of the time window of Kashino, and that the limitation "determine segmentation boundaries which are to be actually utilized within a segmentation boundary shiftable range" recited in previous Claim 5 can be read from the determination of the skip width in Kashino.

However, amended Claim 5 "determine[s] segmentation boundaries which minimize the amount of the data of the compressed signal within a segmentation boundary shiftable range having the segmentation boundary shiftable width on both sides of the center thereof". Such a distinctive limitation is neither disclosed nor suggested in any recitations of Kashino, including section 2.4 pointed out by the Examiner.

#### Other dependent claims

These claims should also be allowed at least by virtue of their dependency on the independent claims.

### Outline of claims

For the Examiner's convenience, the following rough outline of the claims may be helpful.

- Claims 1-8: compression of a time-series signal based on dynamic segmentation
- Claims 9-11: Claims 1-8 + time-series active search (hereinafter referred to as "TAS") of Kashino, which is cited in the Office Action.
- Claims 12-23: device, program, and recording medium claims corresponding to method Claims 1 and 9-11.
- Claims 24-28: a reduction in the number of features by means of the pruning of feature sequences (see also reference document 2) + TAS
- Claims 29-32: Claims 24-28 + dynamic segmentation compression
- Claims 33-40: Claims 24-28 + reduction of features using global pruning (see also reference documents 3a-3d)
- Claims 41-43: Dynamic segmentation compression + global pruning + TAS

### CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office

Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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